ZL-Audio/
Musikinstrumente/

Service Manual

Model:SG-789L
LW/MW/SW1-7/FM-Stereo
10 BAND RADIO

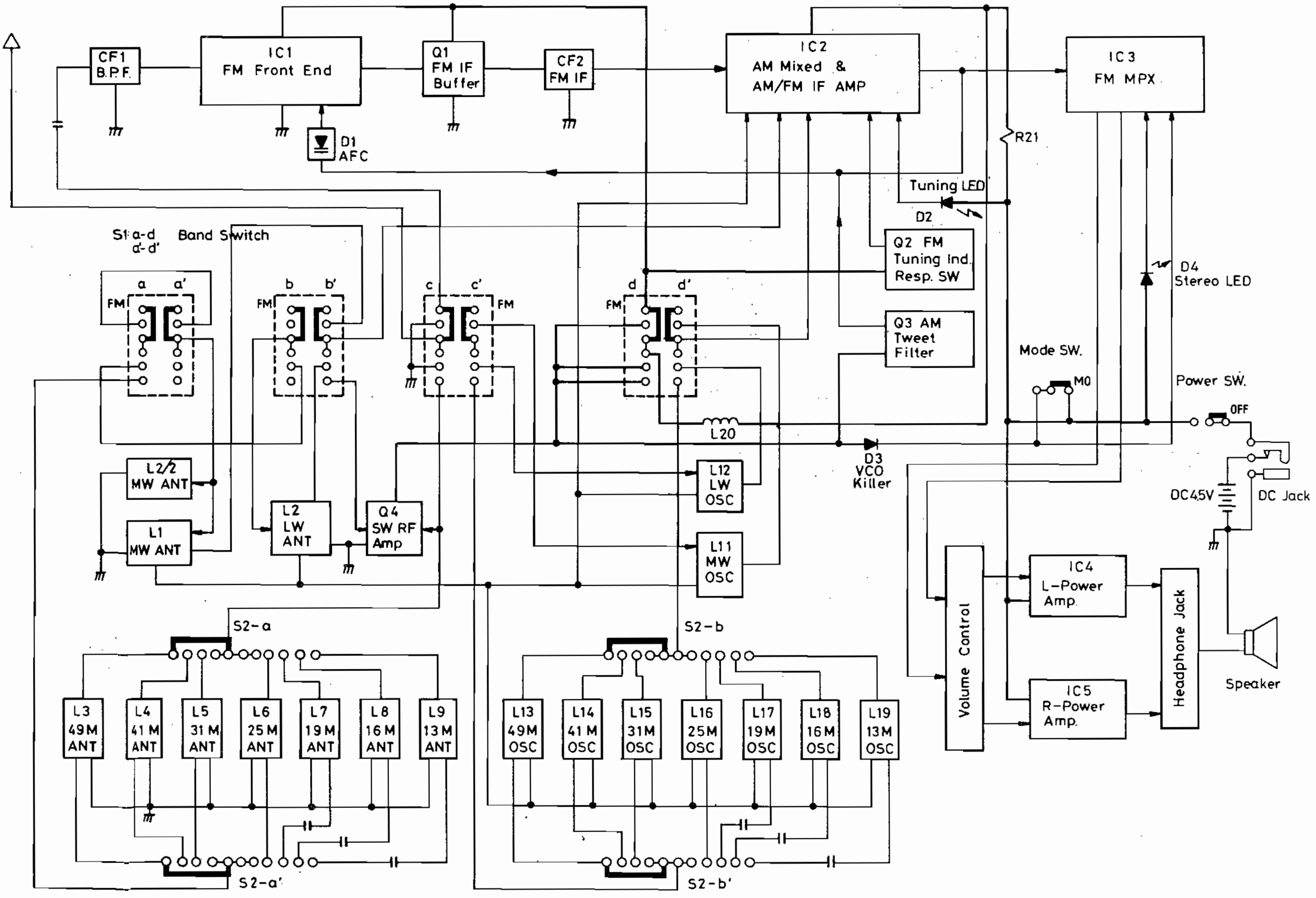
SANGEAN

N 1729

CONTENTS

BLOCK DIAGRAM 1
SPECIFICATION 2-5
TUNER ALIGNMENT INSTRUCTION 6-9
DIAL CORD STRINGING 9
TUNER ALIGNMENT POINTS 10
EQUIPMENT CONNECTION 11
SCHEMATIC DIAGRAM 12
PC BOARD TOP VIEW DIAGRAM 13
PC BOARD BOTTOM VIEW DIAGRAM 14
DISASSEMBLY DIAGRAM 15
PARTS LIST 16-18

BLOCK DIAGRAM



CF1 B.P.F.
IC1 FM Front End
Q1 FM IF Buffer
CF2 FM IF
IC2 AM Mixed & AM/FM IF AMP
IC3 FM MPX
D1 AFC
R21
Tuning LED
D2
S1 a-d a'-d'
Band Switch
a
a'
b
b'
c
c'
d
d'
FM
Q2 FM Tuning Ind. Resp. SW
Q3 AM Tweet Filter
D4 Stereo LED
Mode SW.
MO
Power SW.
OFF
L20
D3 VCO Killer
L2/2 MW ANT
L1 MW ANT
L2 LW ANT
Q4 SW RF Amp
L12 LW OSC
L11 MW OSC
DC4.5V
DC Jack
S2-a
S2-b
L3 49M ANT
L4 41M ANT
L5 31M ANT
L6 25M ANT
L7 19M ANT
L8 16M ANT
L9 13M ANT
L13 49M OSC
L14 41M OSC
L15 31M OSC
L16 25M OSC
L17 19M OSC
L18 16M OSC
L19 13M OSC
S2-a'
S2-b'
Volume Control
IC4 L-Power Amp.
IC5 R-Power Amp.
Headphone Jack
Speaker

SPECIFICATIONS

FM Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	87.4	±0.2	MHz
	Max.	108.25	107.7– 108.5	MHz
Intermediate freq.		10.7	±0.05	MHz
Max. sens.	90MHz		12	db.
	98MH		12	db.
	106MHz		12	db.
Useable sens. (S/N 30db)	90MHz	14	18	db.
	98MHz	14	18	db.
	106MHz	14	18	db.
Calibration	92MHz	±500	±1000	KHz
	100MHz	±500	±1000	KHz
	104MHz	±500	±1000	KHz
Audio fidelity (−6db)	98MHz	150	250	Hz
	98MHz	4000	3600	Hz
3db Limiting (10mv)	98MHz	18	24	db.
Image rejection	106MHZ	26	20	db
I. F. rejection	90MHz	80	60	db
A. F. C. hold range (1mv)	98MHz	600	±200	KHz
T. H. D. (75KHz. dev.)	98MHz	1.5	3	%
Lowest battery voltage	98MHz	2.6	3.0	V
Max. output power	98MHz	250	220	mw
Output power at 10% T. H. D.	98MHz	180	150	mw
Stereo indicator sens.	98MHz	18	22	db.
Tuning indicator sens.	98MHz	22	28	db.
Stereo separation	98MHz	30	24	db
Over load capacity	98MHz		>100	db
Am. suppression	98MHz	36	30	db
Min. output	98MHz	3	5	mv

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 22.5KHz Dev.

MW Band Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	515	522	KHz
	Max.	1640	1620	KHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	600KHz		56	db.
	1000KHz		56	db.
	1400KHz		56	db.
Useable sens. (S/N 20db)	600KHz	56	60	db.
	1000KHz	56	60	db.
	1400KHz	56	60	db.
Calibration	600KHz	±25	±50	KHz
	1000KHz	±40	±70	KHz
	1400KHz	±40	±70	KHz
Audio fidelity (−6db)	1000KHz	150	250	Hz
	1000KHz	2400	2000	Hz
A. C. A. (1 mv)	1000KHz	32	26	db
Bandwidth	1000KHz	6	4–9	KHz
T. H. D. (5mv)	1000KHz	2	4	%
A.G.C. F.O.M.	1000KHz	46	40	db
Image rejection	1400KHz	24	16	db
I. F. rejection	600KHz	30	24	db
Whistle modulation (5mv)	2IF/3IF	10	15	%
Lowest battery voltage	1000KHz	2.6	3.0	V
Tuning indicator sens.	1000KHz	60	66	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

LW Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	145	150	KHz
	Max.	285	281	KHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	170KHz		62	db.
	220KHz		60	db.
	270KHz		60	db.
Useable sens. (S/N 20db)	170KHz	62	66	db.
	220KHz	60	66	db.
	270KHz	60	66	db.
Calibration	170KHz	±3	±5	KHz
	220KHz	±4	±8	KHz
	270KHz	±4	±8	KHz
I.F. rejection	270KHz	28	22	db.
Lowest battery voltage	220KHz	2.6	3.0	V
Tuning indicator sens.	220KHz	64	69	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

49M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	5.78	5.8	MHz
	Max.	6.285	6.20	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	6.1MHz		16	db.
Useabl sens. (S/N 20db)	6.1MHz	18	24	db.
Calibration	5.8MHz	±50	±100	KHz
	6.0MHz	±50	±100	KHz
	6.2MHz	±50	±100	KHz
Image rejection	6.1MHz	18	12	db.
Lowest battery voltage	6.1MHz	2.6	3.0	V
Tuning indicator sens.	6.1MHz	24	30	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

41M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	7.010	7.05	MHz
	Max.	7.58	7.50	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	7.3MHz		14	db.
Useable sens. (S/N 20db)	7.3MHz	18	24	db.
Calibration	7.05MHz	±50	±100	KHz
	7.25MHz	±50	±100	KHz
	7.5MHz	±50	±100	KHz
Image rejection	7.3MHz	18	12	db
Lowest battery voltage	7.3MHz	2.6	3.0	V
Tuning indicator sens.	7.3MHz	24	30	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

31M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	9.40	9.45	MHz
	Max.	9.970	9.9	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	9.7MHz		14	db.
Useable sens. (S/N 20db)	9.7MHz	18	24	db.
Calibration	9.45MHz	±50	±100	KHz
	9.65MHz	±50	±100	KHz
	9.9MHz	±50	±100	KHz
Image rejection	9.7MHz	16	10	db
Lowest battery voltage	9.7MHz	2.6	3.0	V
Tuning indicator sens.	9.7MHz	24	30	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

25M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	11.5	11.55	MHz
	Max.	12.15	12.05	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	11.8 MHz		14	db.
Useable sens. (S/N 20db)	11.8 MHz	18	24	db.
Calibration	11.65MHz	±50	±100	KHz
	11.85MHz	±50	±100	KHz
	12.05MHz	±50	±100	KHz
Image rejection	11.8 MHz	16	10	db
Lowest battery voltage	11.8 MHz	2.6	3.0	V
Tuning indicator sens.	11.8 MHz	24	30	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

19M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	15.01	15.05	MHz
	Max.	15.62	15.55	MHz
Intermediate freq.		460	±1.5	KHz
Max.sens.	15.3 MHz		16	db.
Useable sens. (S/N 20db)	15.3 MHz	18	24	db.
Calibration	15.05MHz	±50	±100	KHz
	15.25MHz	±50	±100	KHz
	15.5 MHz	±50	±100	KHz
Image rejection	15.3 MHz	14	8	db
Lowest battery voltage	15.3 MHz	2.6	3.0	V
Tuning indicator sens.	15.3 MHz	26	32	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

16M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	17.400	17.45	MHz
	Max.	18.150	18.05	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	17.8 MHz		16	db.
Useable sens. (S/N 20db)	17.8 MHz	18	24	db.
Calibration	17.45MHz	±50	±100	KHz
	17.65MHz	±50	±100	KHz
	18.0 MHz	±50	±100	KHz
Image rejection	17.8 MHz	12	7	db
Lowest battery voltage	17.8 MHz	2.6	3.0	V
Tuning indicator sens.	17.8 MHz	26	32	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

13M Band Electrical Performance

Test item	Condition	Nominal	Limit	Unit
Tuning range	Min.	21.360	21.45	MHz
	Max.	22.070	21.950	MHz
Intermediate freq.		460	±1.5	KHz
Max. sens.	21.8 MHz		18	db.
Useable sens. (S/N 20db)	21.8 MHz	18	24	db.
Calibration	21.45MHz	±50	±100	KHz
	21.65MHz	±50	±100	KHz
	21.95MHz	±50	±100	KHz
Image rejection	21.8 MHz	10	6	db
Lowest battery voltage	21.8 MHz	2.6	3.0	V
Tuning indicator sens.	21.8 MHz	28	34	db.

Supply voltage	DC 4.5V	R. O.	50mW	Load	8ohm	Modulation	1KHz 30% Mod.

TUNER ALIGNMENT INSTRUCTION

NOTE: For 789L, it must be adjust LW section first then MW section.
If you adjust MW section first then LW section, the MW section may be drift in LW section adjustment.

FM Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
IF	IF Sweep Generator to Pin 4 of IC 1 (TA7358AP) Oscilloscope from pin 9 of IC 2 (TA 7757P) to ground (Fig. 4)	1	10.7MHz Sweep	Tuning gang fully closed	T1, T3 Adjust for Max symmetrical response
		2			Repeat step 1
BAND	FM Signal Generator to Ant. terminal matching network output meter (VTVM) across 8 ohm load (Fig. 5)	3	$87.5^{+0}_{-0.3}$MHz (1KHz Mod)	Tuning Gang Fully closed	L22 Adjust for Max. output
		4	$108^{+0.5}_{-0}$ MHz (1KHz Mod)	Tuning Gang fully open	VT2 Adjust for Max output
		5			Repeat step 3& 4
TRACKING	FM Signal Generator to Ant. terminal matching network output meter (VTVM) across 8 ohm load (Fig. 5)	6	90MHz	Tune to signal	L21 Adjust for Max. output
		7	106MHz		VT1 Adjust for Max. otput
		8			Repeat step 6& 7

MW Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
IF	AM Signal Generator with loop antenna output meter (VTVM) across 8 ohm load (Fig. 1)	1	460KHz	Tuning gang fully closed	T2, T4 Adjust for Maximum output
		2			Repeat step 1 until no further improvement can adjust for max. output
BAND	Same as step 1 (Fig. 2)	3	515KHz (1KHz Mod)	Tuning gang fully closed	L11 Adjust for Max. output
		4	1640KHz (1KHz Mod)	Tuning gang fully open	VT4 Adjust for Max. output
		5			Repeat step 3 & 4
TRACKING	Same as step 1 (Fig. 2)	6	600KHz (1KHz Mod)	Tune to signal	L1 Adjust for Max. output
		7	1400KHz (1KHz Mod)		VT3 Adjust for Max. output
		8			Repeat step 6 & 7

FM MPX

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Diai Setting	Adjustments
19KHz	Connect freq. counter to pin 12 of IC 3 (AN 7415) and ground (Fig. 6)	1		Quite point on band	Adjust VR1 for freq. counter Ind. of 19KHz
SEPARATION	FM stereo Gen. Composite out connected to Ext. Mod of FM Signal Gen. FM Signal Gen. to an terminal Oscilloscope and VTVM to left (right) speaker terminals across 8 ohm load (Fig. 7)	2	98MHz (1KHz Mod)	98MHz	Read output from left (right) channel when right (left) channel is modulated channel separation should be not less than 24dB
		3			Repeat step 1 & 2 obtain proper separation

49M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	1	5.78MHz (1KHz Mod)	Tuning Gang fully closed	L13 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	2	6.1MHz (1KHz Mod)	Tune to signal	L3 Adjust for Max. output

41M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generatoror with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (F g. 3)	1	7.01MHz (1KHz Mod)	Tuning gang fully closed	L14 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig.3)	2	7.3MHz (1KHz Mod)	Tune to signal	L4 Adjust for Max. output

31M Band Section

Circuit Alignment	Equipment Connection	Step	Gen.Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	1	9.4 MHz (1KHz Mod)	Tuning gang fully closed	L15 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	2	9.7MHz (1KHz Mod)	Tune to signal	L5 Adjust for Max. output

25M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	1	11.500MHz (1KHz Mod)	Tuning gang fully closed	L16 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	2	11.80MHz (1KHz Mod)	Tune to signal	L6 Adjust for Max. output

19M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	1	15.01 MHz (1KHz Mod)	Tuning gang fully closed	L17 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter(VTVM) across 8 ohm load (Fig. 3)	2	15.3MHz (1KHz Mod)	Tune to signal	L7 Adjust for Max. output

16M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12Pf dummy Ant. output meter(VTVM) across 8 ohm load (Fig.3)	1	17.4MHz (1KHz Mod)	Tuning gang fully closed	L18 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	2	17.8MHz (1KHz Mod)	Tune to signal	L8 Adjust for Max. output

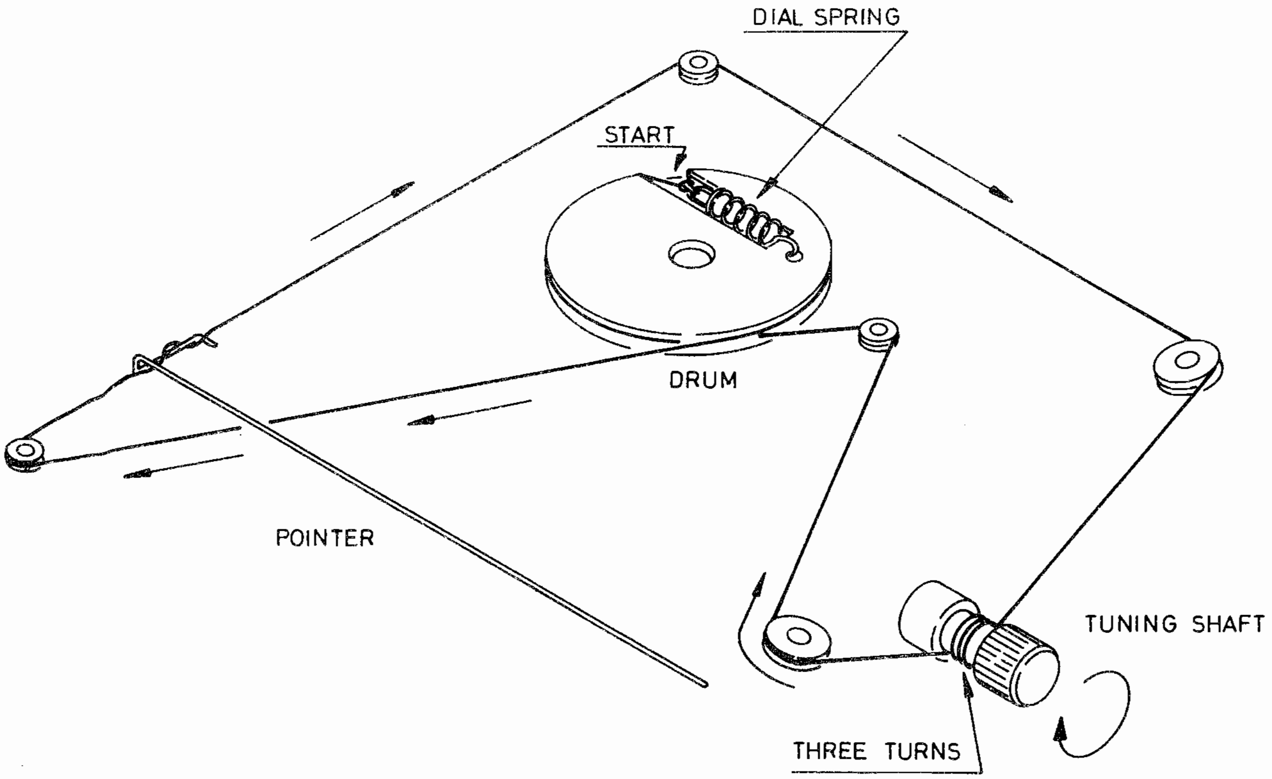
13M Band Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	1	21.36MHz (1KHz Mod)	Tuning gang fully closed	L19 Adjust for Max. output
TRACKING	AM Signal Generator with 12Pf dummy Ant. output meter (VTVM) across 8 ohm load (Fig. 3)	2	21.8MHz (1KHz Mod)	Tune to signal	L9 Adjust for Max. output

LW Section

Circuit Alignment	Equipment Connection	Step	Gen. Freq.	Dial Setting	Adjustments
BAND	AM Signal Generator with loop antenna output meter (VTVM) across 8 ohm load (Fig. 2)	1	145KHz (1KHz Mod)	Tuning gang fully closed	L12 Adjust for Max. output
		2	285KHz (1KHz Mod)	Tuning gang fully open	VT6 Adjust for Max. output
		3			Repeat step 1 & 2
TRACKING	Same as step 1 (Fig. 2)	4	170KHz (1KHz Mod)	Tune to signal	L2 Adjust coil on ferrite core for Max. output
		5	270KHz (1KHz Mod)		VT5 Adjust for Max. output
		6			Repeat step 4 & 5

DIAL CORD STRINGING


DIAL SPRING
START
DRUM
POINTER
TUNING SHAFT
THREE TURNS

TEST EQUIPMENT CONNECTION

FIGURE 1. MW IF

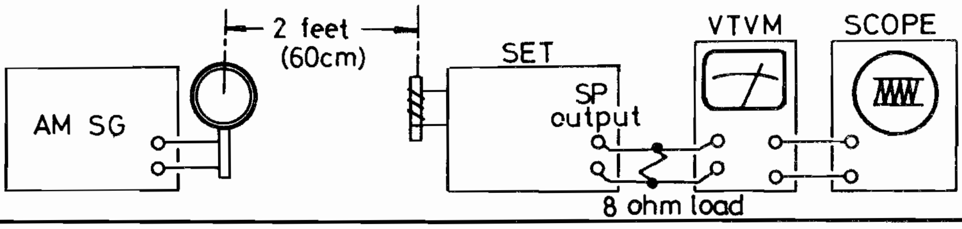

2 feet
(60cm)
AM SG
SET
SP
output
VTVM
SCOPE
8 ohm load

FIGURE 2. MW, LW BAND/TRACKING

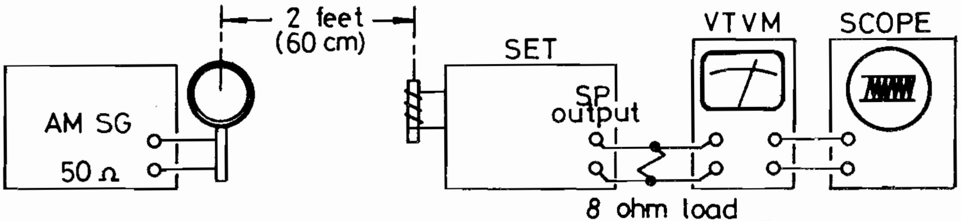

2 feet
(60 cm)
AM SG
50 Ω
SET
SP
output
VTVM
SCOPE
8 ohm load

FIGURE 3. SW BAND/TRACKING

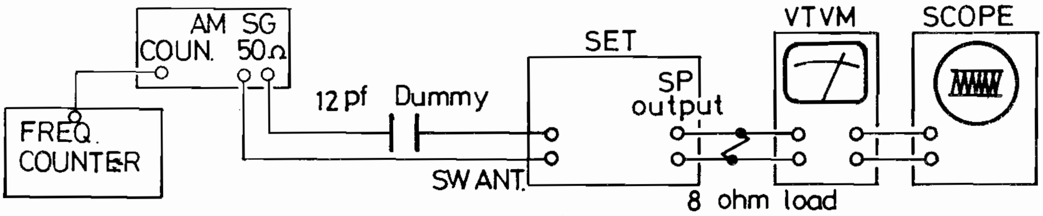

AM SG
COUN.
50Ω
FREQ.
COUNTER
12 pf
Dummy
SW ANT.
SET
SP
output
VTVM
SCOPE
8 ohm load

FIGURE 4. FM IF

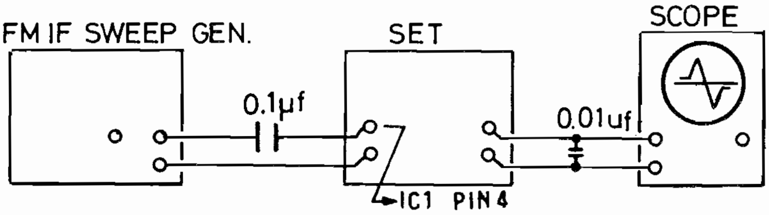

FM IF SWEEP GEN.
0.1μf
SET
IC1 PIN 4
0.01uf
SCOPE

FIGURE 5. FM BAND/TRACKING

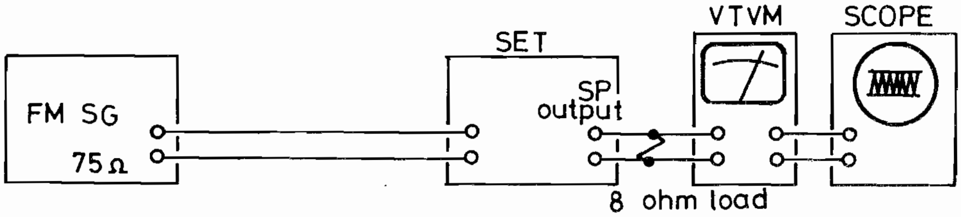

FM SG
75 Ω
SET
SP
output
VTVM
SCOPE
8 ohm load

FIGURE 6. 19 KHz PILOT

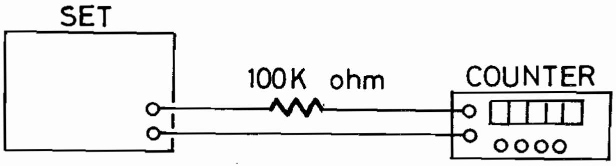
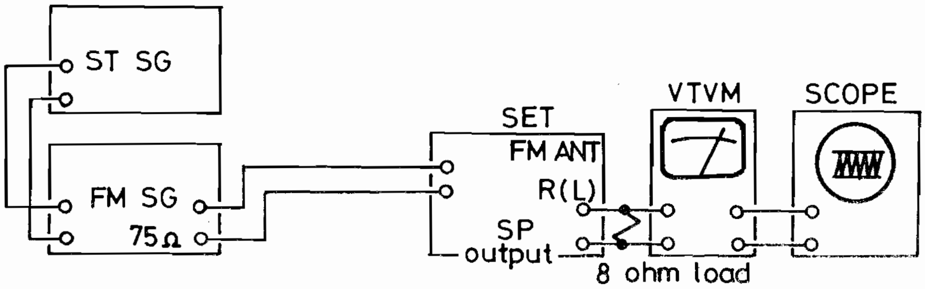
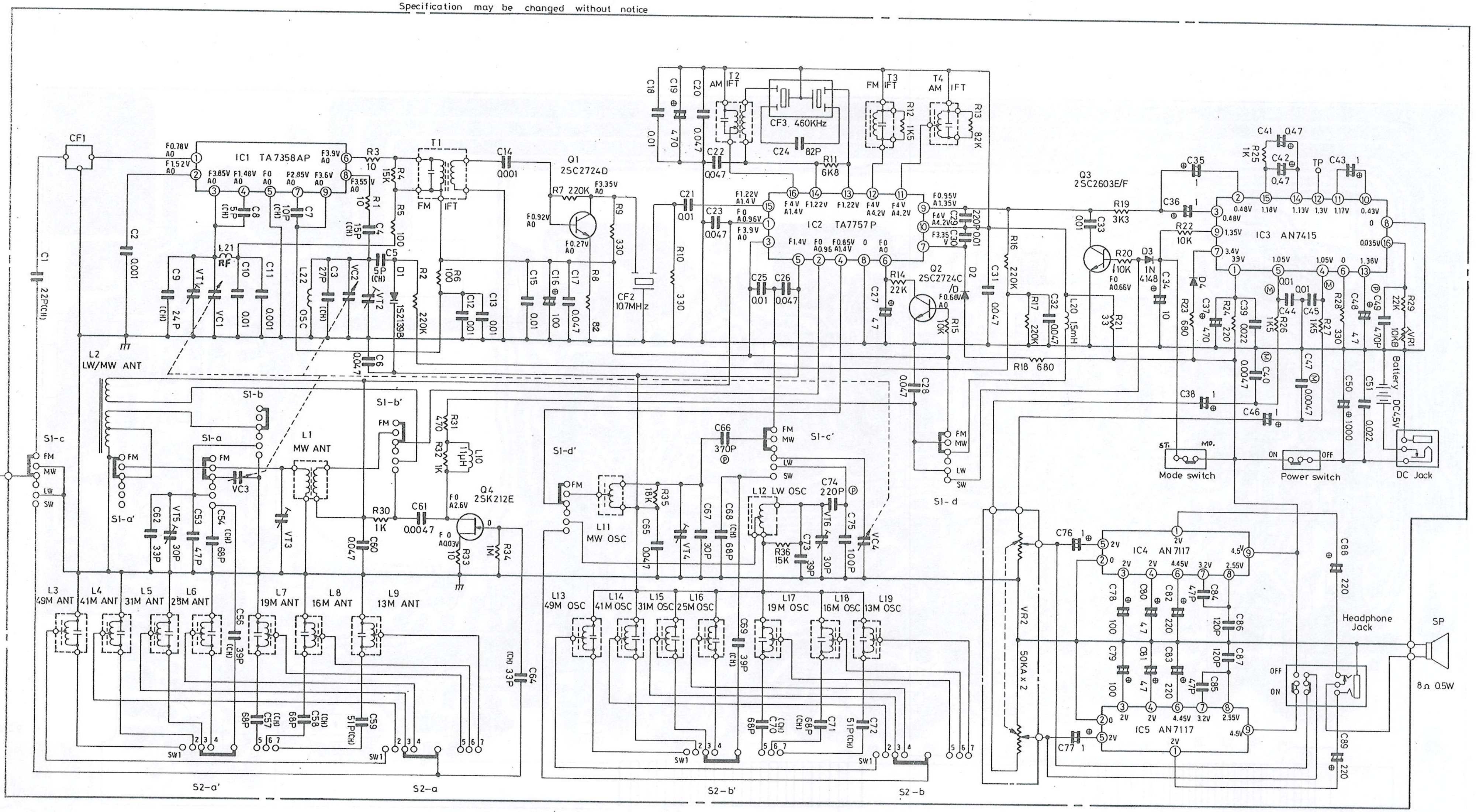

SET
100K ohm
COUNTER

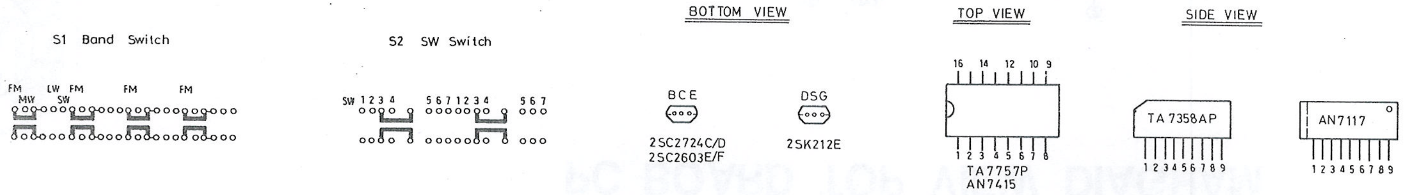
FIGURE 7. SEPARATION


ST SG
FM SG
75 Ω
SET
FM ANT
R(L)
SP
output
VTVM
SCOPE
8 ohm load

SCHEMATIC DIAGRAM

Specification may be changed without notice


CF1
IC1 TA7358AP
T1
FM IFT
Q1 2SC2724D
CF2 10.7MHz
T2 AM IFT
CF3 460KHz
T3 FM IFT
T4 AM IFT
IC2 TA7757P
Q2 2SC2724C/D
Q3 2SC2603E/F
IC3 AN7415
TP
Battery DC4.5V
DC Jack
Power switch
Mode switch
ST.
MO.
ON
OFF
L2 LW/MW ANT
L1 MW ANT
Q4 2SK212E
L10 11μH
L11 MW OSC
L12 LW OSC
L20 1.5mH
L21 RF
L22 OSC
S1-a
S1-a'
S1-b
S1-b'
S1-c
S1-c'
S1-d
S1-d'
FM
MW
LW
SW
VC1
VC2
VC3
VC4
VT1
VT2
VT3
VT4
VT5
VT6
L3 49M ANT
L4 41M ANT
L5 31M ANT
L6 25M ANT
L7 19M ANT
L8 16M ANT
L9 13M ANT
L13 49M OSC
L14 41M OSC
L15 31M OSC
L16 25M OSC
L17 19M OSC
L18 16M OSC
L19 13M OSC
S2-a'
S2-a
S2-b'
S2-b
SW1
VR2 50KA x 2
IC4 AN7117
IC5 AN7117
Headphone Jack
SP
8Ω 0.5W


BOTTOM VIEW
TOP VIEW
SIDE VIEW
S1 Band Switch
FM
MW
LW
SW
S2 SW Switch
SW 1 2 3 4
5 6 7 1 2 3 4
5 6 7
BCE
2SC2724C/D
2SC2603E/F
DSG
2SK212E
16 14 12 10 9
1 2 3 4 5 6 7 8
TA7757P
AN7415
TA7358AP
1 2 3 4 5 6 7 8 9
AN7117
1 2 3 4 5 6 7 8 9

NOTES

Resistance in Ω , K=10^3Ω

Capacitance in μf , p=10^{-6}μf

Ⓜ----Mylar capacitor

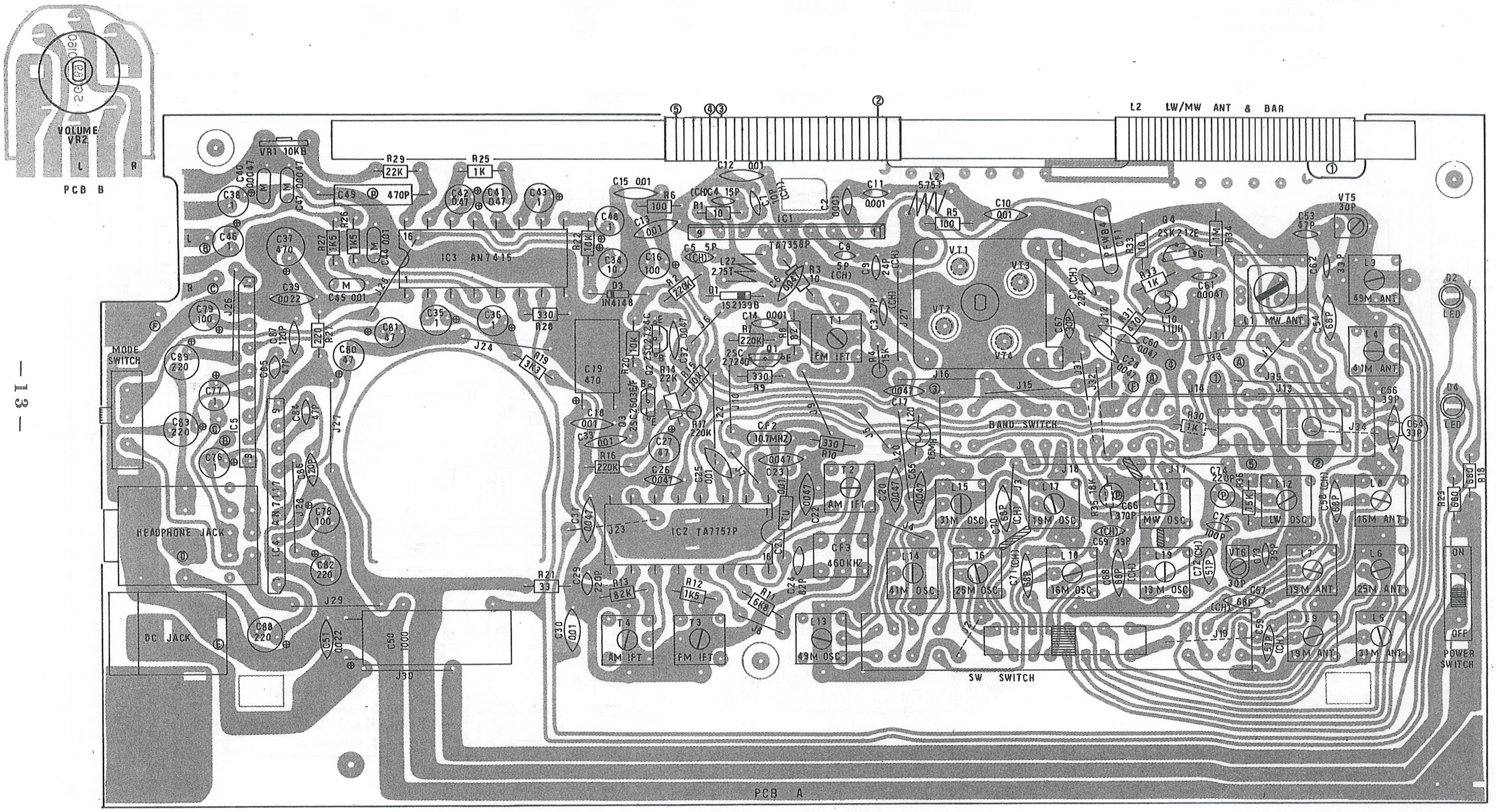
Ⓟ---- Polystyrence capacitor

$\pm$---- Electrolytic capacitor

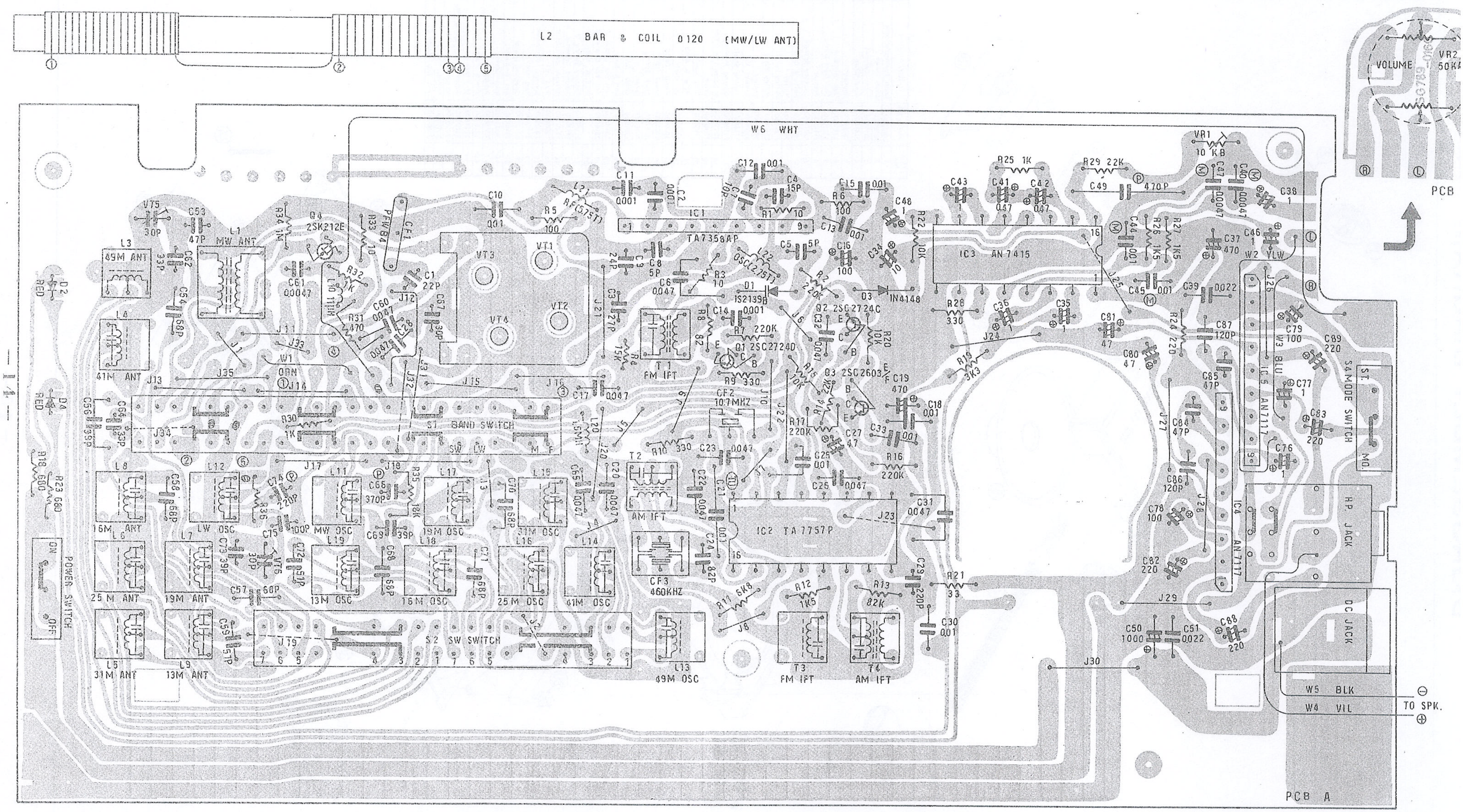
() ----Temperature characteristic capacitor

No mark---Ceramic capacitor

PC BOARD TOP VIEW DIAGRAM

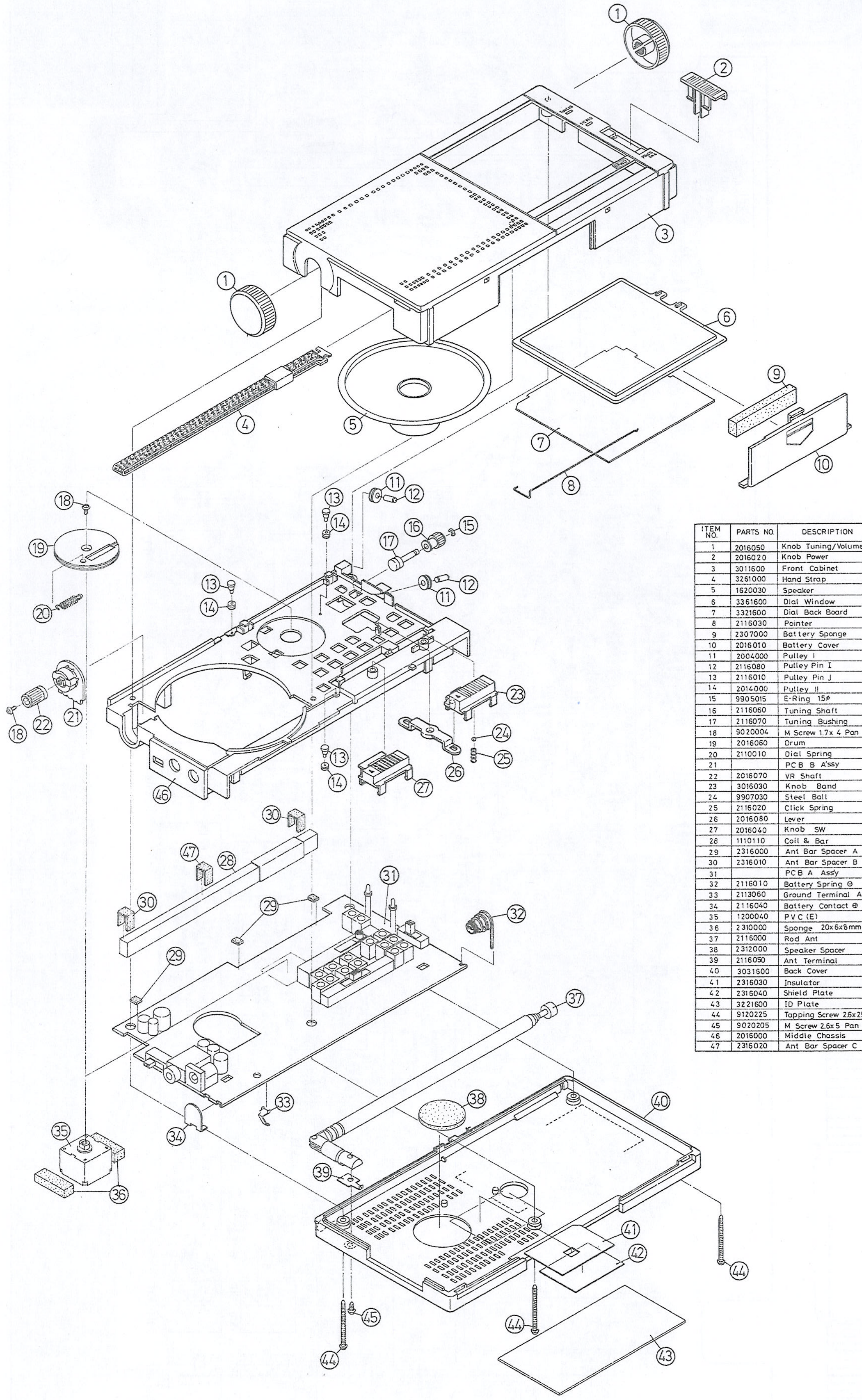

VOLUME VR2
L
R
PCB B
VR1 10KB
L2 LW/MW ANT & BAR
①
②
③
④
⑤
IC1 TA7358P
IC2 TA7757P
IC3 AN7415
IC4 AN7117
IC5
VT1
VT2
VT3
VT4
VT5 30P
VT6
BAND SWITCH
SW SWITCH
MODE SWITCH
POWER SWITCH
ON
OFF
HEADPHONE JACK
DC JACK
LED
D1 1S2139B
D2
D3 1N4148
D4
Q1 2SC2724C
Q2 2SC2724C
Q3 2SC2603E/F
Q4 2SK212E
T1 FM IFT
T2 AM IFT
T3 FM IFT
T4 AM IFT
CF1 PFWB4
CF2 10.7MHZ
CF3 460KHZ
L1 MW ANT
L3 49M ANT
L4 41M ANT
L5 31M ANT
L6 25M ANT
L7 19M ANT
L8 16M ANT
L9 19M ANT
L10 11UH
L11 MW OSC
L12 LW OSC
L13 49M OSC
L14 41M OSC
L15 31M OSC
L16 25M OSC
L17 19M OSC
L18 16M OSC
L19 13M OSC
L20 15MH
L21 5.75T
L22 2.75T
C19 470
C50 1000
C37 470
C89 220
C83 220
C88 220
C82 220
C78 100
C79 100
C16 100
PCB A

PC BOARD BOTTOM VIEW DIAGRAM



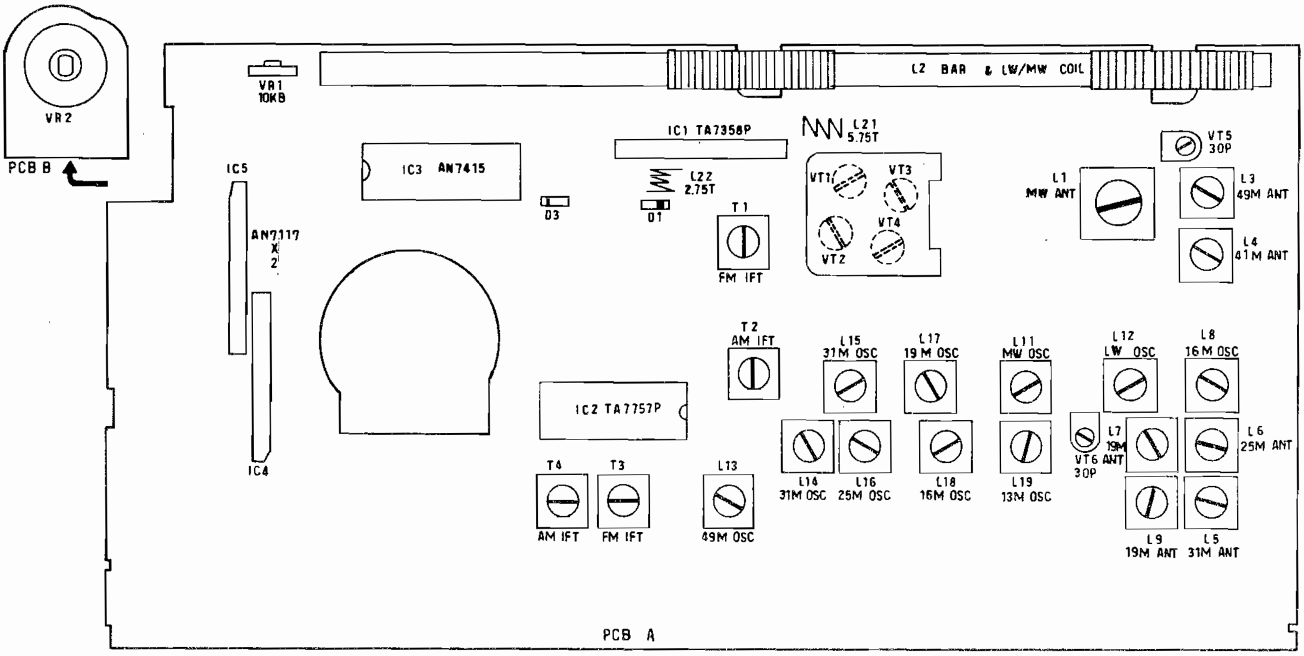
L2 BAR & COIL 0120 (MW/LW ANT)
①
②
③④
⑤
VOLUME
VR2 50KA
PCB
PCB A
W6 WHT
VR1 10 KB
IC1 TA7358AP
IC2 TA7757P
IC3 AN7415
IC4 AN7117
IC5 AN7117
S1 BAND SWITCH
SW LW M F
S2 SW SWITCH
S4 MODE SWITCH
ST. MO.
H.P. JACK
DC JACK
POWER SWITCH
ON OFF
W5 BLK
W4 VIL
TO SPK.
⊖
⊕
W1 ORN
W2 YLW
W3 BLU
L1 MW ANT
L3 49M ANT
L4 41M ANT
L5 31M ANT
L6 25 M ANT
L7 19M ANT
L8 16M ANT
L9 13M ANT
L10 11UH
L11 MW OSC
L12 LW OSC
L13 49M OSC
L14 41M OSC
L15 31M OSC
L16 25 M OSC
L17 19M OSC
L18 16 M OSC
L19 13M OSC
L20 1.5MH
L21 RF(2.75T)
L22 OSC(2.75T)
T1 FM IFT
T2 AM IFT
T3 FM IFT
T4 AM IFT
CF1 PFWB4
CF2 10.7MHZ
CF3 460KHZ
VT1
VT2
VT3
VT4
VT5 30P
VT6 30P
Q1 2SC2724D
Q2 2SC2724C
Q3 2SC2603
Q4 2SK212E
D1 1S2139B
D2 RED
D3 1N4148
D4 RED
R1 10
R2 220K
R3 10
R4 15K
R5 100
R6 100
R7 220K
R8 82
R9 330
R10 330
R11 6K8
R12 1K5
R13 82K
R14 22K
R15 10K
R16 220K
R17 220K
R18 680
R19 3K3
R20 10K
R21 33
R22 10K
R23 680
R24 220
R25 1K
R26 1K5
R27 1K5
R28 330
R29 22K
R30 1K
R31 470
R32 1K
R33 10
R34 1M
R35 18K
C1 22P
C2 0.001
C3 27P
C4 15P
C5 5P
C6 0.047
C7 10P
C8 5P
C9 24P
C10 0.01
C11 0.001
C12 0.01
C13 0.01
C14 0.001
C15 0.01
C16 100
C17 0.047
C18 0.01
C19 470
C20 0.047
C21 0.01
C22 0.047
C23 0.047
C24 82P
C25 0.01
C26 0.047
C27 47
C29 220P
C30 0.01
C31 0.047
C32 0.047
C33 0.01
C34 10
C35 1
C36 1
C37 470
C38 1
C39 0.022
C40 0.0047
C41 0.47
C42 0.47
C43 1
C44 0.01
C45 0.01
C46 1
C47 0.0047
C48 1
C49 470P
C50 1000
C51 0.022
C53 47P
C54 68P
C56 39P
C57 60P
C58 68P
C59 51P
C60 0.047
C61 0.0047
C62 33P
C64 33P
C65 0.047
C66 370P
C67 30P
C68 68P
C69 39P
C70 68P
C71 68P
C72 51P
C73 39P
C74 220P
C75 100P
C76 1
C77 1
C78 100
C79 100
C80 47
C81 47
C82 220
C83 220
C84 47P
C85 47P
C86 120P
C87 120P
C88 220
C89 220
J1
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
J16
J17
J18
J19
J20
J21
J22
J23
J24
J25
J26
J27
J28
J29
J30
J31
J32
J33
J34
J35

DISASSEMBLY DIAGRAM



ITEM NO.	PARTS NO.	DESCRIPTION
1	2016050	Knob Tuning/Volume
2	2016020	Knob Power
3	3011600	Front Cabinet
4	3261000	Hand Strap
5	1620030	Speaker
6	3361600	Dial Window
7	3321600	Dial Back Board
8	2116030	Pointer
9	2307000	Battery Sponge
10	2016010	Battery Cover
11	2004000	Pulley I
12	2116080	Pulley Pin I
13	2116010	Pulley Pin J
14	2014000	Pulley II
15	9905015	E-Ring 1.5ø
16	2116060	Tuning Shaft
17	2116070	Tuning Bushing
18	9020004	M Screw 1.7x 4 Pan
19	2016060	Drum
20	2110010	Dial Spring
21		PCB B A'ssy
22	2016070	VR Shaft
23	3016030	Knob Band
24	9907030	Steel Ball
25	2116020	Click Spring
26	2016080	Lever
27	2016040	Knob SW
28	1110110	Coil & Bar
29	2316000	Ant Bar Spacer A
30	2316010	Ant Bar Spacer B
31		PCB A Assy
32	2116010	Battery Spring ⊖
33	2113060	Ground Terminal A
34	2116040	Battery Contact ⊕
35	1200040	PVC (E)
36	2310000	Sponge 20x6x8mm
37	2116000	Rod Ant
38	2312000	Speaker Spacer
39	2116050	Ant Terminal
40	3031600	Back Cover
41	2316030	Insulator
42	2316040	Shield Plate
43	3221600	ID Plate
44	9120225	Tapping Screw 2.6x25 Pan
45	9020205	M Screw 2.6x5 Pan
46	2016000	Middle Chassis
47	2316020	Ant Bar Spacer C

TUNER ALIGNMENT POINTS


VR2
PCB B
VR1
10KB
L2 BAR & LW/MW COIL
IC1 TA7358P
L21
5.75T
IC5
IC3 AN7415
L22
2.75T
D3
D1
T1
FM IFT
VT1
VT3
VT4
VT2
VT5
30P
L1
MW ANT
L3
49M ANT
L4
41M ANT
AN7117
X
2
T2
AM IFT
L15
31M OSC
L17
19 M OSC
L11
MW OSC
L12
LW OSC
L8
16 M OSC
IC2 TA7757P
L7
19M
VT6 ANT
30P
L6
25M ANT
L14
31M OSC
L16
25M OSC
L18
16M OSC
L19
13M OSC
IC4
T4
AM IFT
T3
FM IFT
L13
49M OSC
L9
19M ANT
L5
31M ANT
PCB A

PARTS LIST

PART NO.	DESCRIPTION	Q'TY	Symbol No. of Schematic Diagram
1010210	IC TA7358AP	1	I C 1
1010250	IC TA7757P	1	I C 2
1010030	IC AN7415	1	I C 3
1010000	IC AN7117	2	I C 4 – 5
1020130/1	Transistor 2SC2603 E/F	1	Q 3
1020140/1	Transistor 2SC2724 C/D	1	Q 2
1020141	Transistor 2SC2724D	1	Q 1
1030001	FET 2SK212E	1	Q 4
1040020	Diode IN4148	1	D 3
1040040	Diode IS2139B	1	D 1
1050020	LED Red 3ϕ(A)	2	D 2 , 4
1110120	Bar & MW Coil 0120	1	L 2
1120090	Adjust Coil 0090	2	T 2 , 4
1120110	Adjust Coil 0110	1	T1
1120620	Adjust Coil 0620	1	T3
1120750	Adjust Coil 0750	1	L19
1120760	Adjust Coil 0760	1	L18
1120770	Adjust Coil 0770	1	L17
1120780	Adjust Coil 0780	1	L16
1120790	Adjust Coil 0790	1	L15
1120800	Adjust Coil 0800	1	L14
1120810	Adjust Coil 0810	1	L13
1120821	Adjust Coil 0821	1	L9
1120830	Adjust Coil 0830	1	L8
1120840	Adjust Coil 0840	1	L7
1120850	Adjust Coil 0850	1	L6
1120860	Adjust Coil 0860	1	L5
1120870	Adjust Coil 0870	1	L4
1120880	Adjust Coil 0880	1	L3
1120920	Adjust Coil 0920	1	L12
1120930	Adjust Coil 0930	1	L1
1120910	Adjust Coil 0910	1	L11
1130090	Fixed Coil 1.5mH	1	L20
1130030	Fixed Coil 11μH	1	L10
1140080	Spring Coil 0080	1	L22
1140130	Spring Coil 0130	1	L21
1200040	PVC (E)	1	VT1–4,VC1–4
1210001	Trimmer 30P [A]	2	VT5–6
1310040	Rotary–VR 50KA x 2 (B)	1	VR2
1320010	Semi-fixed VR 10KB (B)	1	VR1
1610140	PCB A 789–0140	1	
1610160	PCB B 789–0160	1	
1620030	SPEAKER 3" 8Ω 0.5W(C)	1	
1630010	Power Switch 1P2C(A)	1	S3
1630180	Band Switch 8P4C(B)	1	S1
1630190	Mode Switch 1P2C (E)	1	S4
1630200	SW Switch 4P7C	1	S2
1640040	Jack Headphone (E)	1	
1647000	Jack DC (A)	1	
1660000	Filter 88–108 MHz	1	CF1
1660080-4	Filter 10.7MHz (A)~(E)	1	CF2
1660110	Filter 460KHz (C)	1	CF3
4105002	Ceramic Cap. 050C 50V	2	C5,8
4106013	Ceramic Cap.060D 50V	0	C73
4110002	Ceramic Cap.100D 50V	1	C7
4115002	Ceramic Cap.150J 50V	1	C4

PART NO	DESCRIPTION	Q'TY	Symbol No. of Schematic Diagram
4110113	Ceramic Cap. 101J 50V	1	C75
4122002	Ceramic Cap. 220J 50V	1	C1
4124002	Ceramic Cap. 240J 50V	1	C9
4127002	Ceramic Cap. 270J 50V	1	C3
4133013	Ceramic Cap. 330J 50V	1	C62
4130013	Ceramic Cap. 300J 50V	1	C67
4133002	Ceramic Cap. 330J 50V	1	C64
4139002	Ceramic Cap. 390J 50V	1	C56
4139013	Ceramic Cap. 390J 50V	1	C73
4147013	Ceramic Cap. 470J 50V	3	C84-85 53
4151002	Ceramic Cap. 510J 50V	2	C59,72
4182013	Ceramic Cap. 820J 50V	1	C 24
4168002	Ceramic Cap. 680J 50V	6	C54,57-58,68,70-71
4112114	Ceramic Cap. 121K 50V	2	C86-87
4122114	Ceramic Cap. 221K 50V	1	C29
4110214	Ceramic Cap. 102K 50V	3	C2,11,14
4147215	Ceramic Cap. 472Z 50V	1	C61
4110315	Ceramic Cap. 103Z 50V	8	C10,12-13,18,15.25,30,33
4122315	Ceramic Cap. 223Z 50V	2	C39,51
4147322	Ceramic Cap. 473M 12V	11	C6,17,20,22-23,26,28,31,32, 60,65,
4139019	Ceramic Cap. 390J 50V	1	C69
4210300	Tubler Cap. 103M 25V	1	C21
4447400	Elec. Cap. 474M 50V	2	C41-42
4410500	Elec. Cap. 105M 50V	8	C35-36,38,43,46,48,76-77
4410600	Elec. Cap. 106M 16V	1	C34
4447601	Elec. Cap. 476M 6.3V	3	C27,80,81
4410700	Elec. Cap. 107M 4V	3	C16,78-79
4422712	Elec. Cap. 227M 6.3V	4	C82-83,88-89
4447712	Elec. Cap. 477M 6.3V	2	C19,37
4410812	Elec. Cap. 108M 10V	1	C50
4537100	PS. Cap. 371J 50V	1	C66
4547101	PS. Cap. 471J 50V	1	C49
4522101	PS. Cap. 221J 50V	1	C74
4647200	Mylar Cap. 472J 50V	2	C40,47
4610300	Mylar Cap. 103J 50V	2	C44-45
6010512	Resistor 1/8W 10JSM5	3	R1,3,33
6010518	Resistor 1/8W 33JSM5	1	R21
6010524	Resistor 1/8W 100JSM5	2	R5-6
6010523	Resistor 1/8W 82JSM5	1	R8
6010528	Resistor 1/8W 220JSM5	1	R24
6010530	Resistor 1/8W 330JSM5	3	R9-10,28
6010532	Resistor 1/8W 470JSM5	1	R31
6010534	Resistor 1/8W 680JSM5	2	R18,23
6010536	Resistor 1/8W 1KJSM5	3	R25,30,32
6010538	Resistor 1/8W 1.5KJSM5	3	R12,26-27
6010542	Resistor 1/8W 3.3KJSM5	1	R19
6010550	Resistor 1/8W 15 KJSM5	1	R36
6010546	Resistor 1/8W 6.8KJSM5	1	R11
6010548	Resistor 1/8W 10KJSM5	3	R15,20,22
6010150	Resistor 1/8W 15KJU	1	R4
6010551	Resistor 1/8W 18KJSM5	1	R35
6010552	Resistor 1/8W 22KJSM5	2	R14,29
6010559	Resistor 1/8W 82KJSM5	1	R13
6010564	Resistor 1/8W 220KJSM5	3	R2,7,16
6010164	Resistor 1/8W 220KJU	1	R17
6010572	Resistor 1/8W 1MJSM5	1	R34

PART NO.	DESCRIPTION	Q'TY	Symbol No. of PCB Diagram
8000011	Wire Jump 5mm+10x2 0.5φ	9	J1-8 33
8000031	WirerJump 7.5mm+10x2 0.5φ	3	J9-10 34
8000041	Wire Jump 10mm+10x2 0.5φ	23	J11-32 35
8140013	Wire PVC 75mm ORN (15+15) AWG #26T	1	W1
8140024	Wire PVC 85mm YEW (15+15) AWG #26T	1	W2
8140026	Wire PVC 85mm BLU (15+15) AWG #26T	1	W3
8140037	Wire PVC 100mm VIL (3+ 3) AWG #26T	1	W4
8140030	Wire PVC 100mm BLK (3+ 3) AWG #26T	1	W5
8140049	Wire PVC 170mm WHT (15+15) AWG #26T	1	W6
9020004	Machine Screw 1.7x4 Pan Ni	2	
9020205	Machine Screw 2.6x5 Pan Ni	1	
9120225	Tapping Screw 2.6x25 Pan Ni	3	
9905015	E-Ring 1.5φ	1	
3011600	Front cabinet	1	
2016000	Middle chassis	1	
3031600	Back cover	1	
2016010	Battery cover	1	
2016020	Knob Power	1	
2016030	Knob Band	1	
2016040	Knob Sw	1	
2016050	Knob Tuning/volume	2	
3261000	Hand Strap	1	
3221600	ID Plate	1	
3321600	Dial Back Board	1	
3361600	Dial Window	1	
2004000	Pulley I	2	
2014000	Pulley II	3	
2016070	VR Shaft	1	
2016080	Lever	1	
2016060	Drum	1	
2116000	Rod Ant SG-789	1	
2116080	Pulley Pin I	2	
2116090	Pulley Pin J	3	
2116060	Tuning Shaft	1	
2116070	Tuning Bushing	1	
2116040	Battery Contact ⊕	1	
2116010	Battery Spring ⊖	1	
2116020	Click Spring	1	
2110010	Dial Spring	1	
9907030	Steel Ball	1	
2116030	Pointer	1	
2116050	Ant. Terminal	1	
2316040	Shield Plate	1	
2113060	Ground Terminal A	1	
2210000	Dial String 0.4φ 420mm	1	
2216010	Label Series NO.	1	
2310000	Sponge 20x6x8mm	2	
2312000	Speaker Spacer	1	
2307000	Battery Sponge	1	
2316000	Ant Bar Spacer A	3	
2316010	Ant Bar Spacer B	2	
2316020	Ant Bar Spacer C	1	
2316030	Insulator	1	

SANGEAN
ELECTRONICS INC.
OFFICE: No. 265, Chung-Chen Road, Yung-Ho City
Taipei-Hsien, Taiwan, R.O.C.
TEL: (02) 9221861-3
TELEX: 31329 SANGEAN
CABLE ADDRESS: "SANGEAN" Taipei